GRASSHOPPER CONTROL

A radio talk prepared by Dr. W. H. Larrimer, and delivered by Mr. W. R. Walton, Bureau of Entomology, U. S. Department of Agriculture, through Station WRC and 32 other stations associated with the National Broadcasting Company, at 1:15 p.m., E.S.T., Monday, April 21, 1930.

Grasshoppers, or "locusts" as they are most often called in the Old World, have been reckoned among the principal insect enemies of agriculture since man began to till the soil. Writings of the Egyptians, Greeks, and ancient Hebrews all contain references to these insects as pests hateful to the farmer. One of the first and worst outbreaks of record and one with which you are all familiar was the result of Pharaoh's disinclination to be scared by a flock of grasshoppers; he changed his mind, however, when

> ". . . . . The locusts went up over all the land of Egypt and rested in all the coast of Egypt: very grievous were they; before them there were no such locusts as they, neither after them shall be such."

In North America, unmistakable representations of grasshoppers are found on pottery and in the picture-writings of the prehistoric Indians and Aztecs; it is, therefore, quite probable that grasshoppers attacked the maize and other crops of the Indians long before the coming of the white man.

While it is not generally known, it is a fact that grasshoppers played an important part in the early settlements of New England and other eastern States; there are numerous records of inroads by grasshoppers on the crops of those early settlers. In the settlement of the West, however, it is a different story and the hordes of grasshoppers are almost as much a part of that romantic picture as the Indians and the herds of buffalo. During the early 70's, the Rocky Mountain locust frequently swooped down from its breeding grounds in the foothills in such great swarms as to destroy all cultivated crops over vast areas of country. As the settlement of the Rocky Mountain region progressed and the breeding grounds of this destructive insect came under cultivation, these outbreaks ceased; thus there has not been a serious, general outbreak of the Rocky Mountain locust since 1880. However, grasshoppers as a group are very adaptable and there are many other kinds having habits so different that the only effect upon them of this same type of agriculture has been to furnish them with more food for less work.

The life histories of these various species of injurious grasshoppers are quite similar in character. The eggs are laid in the soil during late summer and fall. When the young hoppers hatch during the first warm days in the spring, they closely resemble their parents with the exception of their lack of wings. They eat their way merrily through the summer months, shedding their skins from five to seven times as they increase in size. The young grasshoppers are born hungry and eat very nearly everything in sight; in fact, this uncontrolled appetite has proved their undoing, andthe fabled ant might better have said,

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"If you were foolish enough to eat all summer, you must dance supperless to bed in the winter."

CONTROL

Various methods of controlling or destroying locusts or grasshoppers have been tried since the time of Moses. Unfortunately, we do not have at hand as had the Egyptians, an accomodating west wind and Red sea. Although trapping, burning, and the destruction of the eggs are all helpful, most dependence nowadays is placed on the use of poison baits to kill grasshoppers. These baits are easily made, reliable, cheap, and very effective. While they may vary somewhat in composition, a good standard bait can be prepared as follows:

Wheat bran	100 pounds
Liquid sodium arsenite (8-lb. material)	1 quart
Amyl acetate	3 ounces
Black-strap cane molasses	2 gallons
Water	12 gallons

Mix thoroughly the water, molasses, amyl acetate, and sodium arsenite, and moisten the bran with this mixture. The bran may be mixed either by hand or machine, very much as cement is mixed. The resulting mash must be well mixed - not too wet, for it should crumble easily when scattered. The mash is scattered broadcast by hand at the rate of 10 to 12 pounds per acre, wet weight, before the middle of the forenoon, since the hoppers eat most greedily between 8 and 11 in the morning.

Much time and material can be saved by finding out where the hoppers are and then poisoning them while they are still young and small. Now is the time to look for them. For 10 days to 2 weeks after hatching, they remain congregated in large numbers, in relatively small areas, while later they spread out over entire fields.

Soon after the hoppers have fed on the poison mixture, they begin to "wish they hadn't." We are not particularly concerned with how sick they get, but the point is that they stop feeding very soon after they have eaten the poison mash, even though it may be two or three days before they die; so don't expect them to fall dead immediately, but check up on the results after three or four days and rarely will it be necessary to repeat the remedy.

Remember this caution: Arsenic, of course, is a deadly poison and it should be carefully guarded. Keep the poison mash away from farm animals; they like it too. After it has been sown broadcast as recommended, there is no danger to birds, poultry, or livestock of any kind.

Further details on control, as well as general information on grasshoppers, are given in Farmers' Bulletin 747, which can be obtained free of charge by application to the United States Department of Agriculture, Washington, D. C.

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